Flood Risk Management Report

88 Helen Street, Sefton

Issue A

Prepared For La Salle Group

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REVISION TABLE

Revision	Date	Issue Description	Issued by	Approved by	Signed
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The information given in this document takes into account the particular instructions and requirements of our Client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Table of Contents

1 Introduction 5

1.1 Brief 5

1.2 Limitations 5

1.3 Reference Documents 5

2 Natural & Built Environment 6

2.1 Local and Regional Context 6

2.2 Proposed Development 7

2.3 Council Requirements 7

3 Glossary 8

4 Flood Risk Management 10

4.1 ARR2019 10

4.1.1 General Flood Hazard Curves 10

4.1.2 Isolation, Effective Warning Time, Rate of Rise and Time of Day 12

4.1.2.1 Isolation 12

4.1.2.2 Effective Warning Time 12

4.1.2.3 Rate of Rise 12

4.1.2.4 Time of Day 12

4.2 Existing, Future and Continuing Risks 13

4.3 Preparation for a Flood Emergency 13

4.4 Actions in the Likelihood or During a Flood 14

4.5 After the Flood 15

4.6 Emergency Contact Details 15

4.7 Program 15

5 Plan Adoption 17

A1 Appendix 1 18

A2 Appendix 2 20

A3 Appendix 3 22

P: 02 8883 4239 W: www.sgce.com.au

List of Figures

Figure 2.1 Locality Plan 6
Figure 4.1 Combined Flood Hazard Curves 10
Figure 4.2 Flood Risk Precinct 13

Figure A 1.1 Extract from SSR 19
Figure A 2.1 Survey Plan 21
Figure A 3.1 Ground Floor Plan 23

List of Tables

Table 2.1 Flood Levels 7
Table 4.1 Combined Hazard Curves – Vulnerability Thresholds 11
Table 4.2 Combined Hazard Curves – Vulnerability Thresholds Classified Limits 11
Table 4.3 Possible Flood Awareness Strategies 14
Table 4.4 Emergency Contact List 15
Table 4.5 Implementation, Maintenance and review program 16
Table 5.1 Flood Risk Management Plan Review 17

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1 Introduction

1.1 Brief

S&G Consultants Pty Ltd (SGC) have been engaged by La Salle Group to prepare a flood risk management plan for the proposed self storage development at 88 Helen Street in the suburb of Sefton as required in the Development Consent.

The following tasks were carried out:-

- The flood study prepared by SGC has been referenced;
- Supplied documents and previous studies were reviewed; and
- This report has been compiled.

1.2 Limitations

This report is intended solely for La Salle Group as the sole client of S&G Consultants Pty Ltd and no liability will be accepted for use of the information contained in this report by other parties than this client.

This report is limited to the information including the referenced documents made available at the time when this report was written.

This report does not imply that the site is not subject to flooding. The stakeholders should be aware that there are current and continuing risks of flooding. This report is proposing measures to manage these flooding incidences.

1.3 Reference Documents

The following documents have been referenced in this report:-

- Architectural drawings prepared by Gelder Group Architects;
- Survey plan prepared by W. Buxton Pty Ltd reference 205834 dated 04/03/2024;
- Engineers Australia publication ‘Australian Rainfall and Runoff 1997’;
- Flood Risk Management Manual (2023);
- Duck River Stormwater Catchment Study (2009) by Bewsher & BMT WBM;
- Flood Impact Study report prepared by SGC issue A dated 07/04/25; and
- Canterbury Bankstown Council DCP 2023.

2 Natural & Built Environment

2.1 Local and Regional Context

The site is located in the industrial zone of Sefton, on the western outskirts of Sydney in NSW. The site is identified as Lot X of DP 420237, which falls within the Local Government Authority (LGA) of Canterbury Bankstown Council (CBC). The site is located on Helen Street just north of the railway corridor.

The survey plan of the site indicates that the site's topography is quite flat with a gentle fall towards the corner of Helen Street. Refer to Appendix 2 for a copy of the survey plan.

The site is bounded by adjoining properties to the South, the stormwater channel to the East and Helen Street to West as shown in Figure 2.1 below.

The overall area of the site is 1,890m^2 as noted on the survey. The property is currently an industrial development and is fully built on and features a warehouse along the southern end of the site and an open hard surface area to the north.

Figure 2.1 Locality Plan

The site is located in a flood prone land as identified by CBC and falls in the jurisdiction of the Duck River Stormwater Catchment (Bewsher/BMT WBM 2009).

The Stormwater System Report (SSR) obtained from Council identified the following flood levels for the site:

Table 2.1 Flood Levels

Flood Event	Minimum (mAHD)	Maximum (mAHD)
5% AEP	19.2	19.6
1% AEP	19.9	20.0
PMF	21.2	21.3

2.2 Proposed Development

The proposed development consists of a light industrial development consisting of a self-storage facility which includes:

- 47 storage units; and
- A driveway that loops around the units to provide access.

The proposed use of the site is not classified as hazardous.

2.3 Council Requirements

The site is classified as commercial/industrial land.

CBC has adopted the 1% AEP event as the standard flood. The standard flood will be considered to determine the flood levels and as basis to assess the development application.

The Flood Planning Level (FPL) considered acceptable is 500mm above the 1% AEP storm event.

3 Glossary

Annual Exceedance Probability (AEP)

The chance of a flood of a given or a larger size occurring in any one year, usually expressed as a percentage.

Australian Height Datum (AHD)

A common national surface level datum approximately corresponding to mean sea level.

Average Recurrence Interval (ARI)

The long term average number of years between the occurrence of a flood as big as or larger than the selected event.

Catchment

The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location.

Flood

Relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage before entering a watercourse.

Flood Liable Land or Flood Prone Land

Land susceptible to flooding by the PMF.

Flood Planning Levels (FPLs)

Are the combinations of flood levels and freeboards selected for floodplain risk management purposes.

Freeboard

Is a factor of safety typically used in relation to the setting of floor levels.

Habitable Room

In industrial or commercial situation: an area used for offices or to store valuable possessions susceptible to damage in the event of a flood.

Peak Discharge

The maximum discharge occurring during a flood event.

Probable Maximum Flood

PMF is the largest flood that could conceivably occur at a location, usually estimated from probable maximum precipitation.

Probable Maximum Precipitation

PMP is the greatest depth of precipitation for a given duration meteorologically possible over a given size storm area at a particular location at a particular time of the year.

Runoff

The amount of rainfall which actually ends up as stream flow.

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4 Flood Risk Management

This section of the report outlines and discusses the measures to mitigate the flooding impacts on the proposed development and its users. These measures are specific to the site and complement the floodplain risk management plan prepared by Council, which addresses issues such as evacuation from the precinct during flood events.

The purpose of this plan is:

- To address existing, future and continuing flood risks on the site;
- To establish a program for the implementation of the plan; and
- To allow the stakeholders of the site to adopt this plan.

4.1 ARR2019

4.1.1 General Flood Hazard Curves

When dealing with specific floodplain management or emergency management analysis there may be a clear need to use specific thresholds. However, particularly in a preliminary assessment of risks or as part of a constraints analysis such as might be applied as part of a strategic floodplain management assessment, there is also an acknowledged need for a combined set of hazard vulnerability curves, which can be used as a general classification of flood hazard on a floodplain. A suggested set of curves based on the referenced thresholds presented above is provided in Figure 4.1.

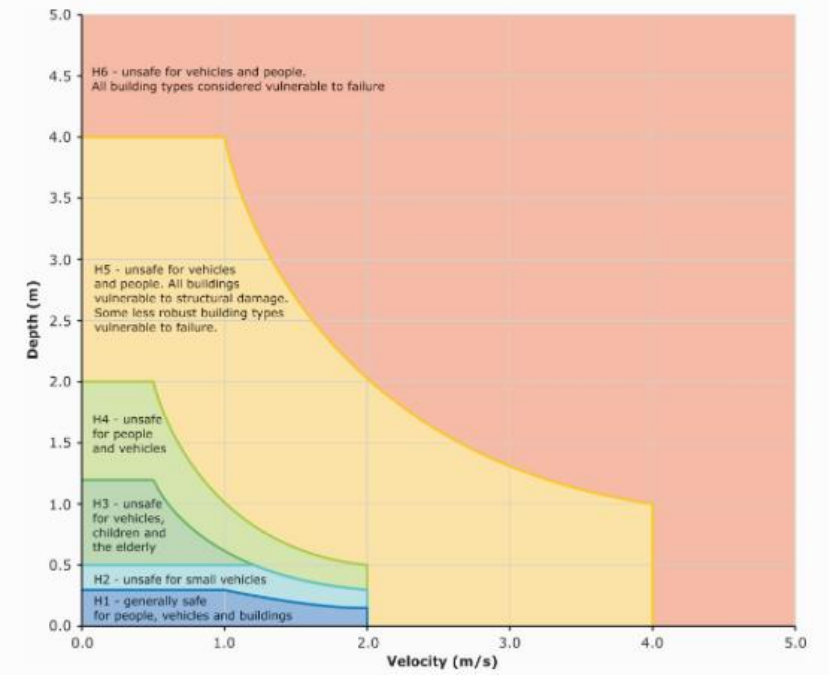

Figure 4.1 Combined Flood Hazard Curves

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The combined flood hazard curves presented in Figure 4.1 set hazard thresholds that relate to the vulnerability of the community when interacting with floodwaters. The combined curves are divided into hazard classifications that relate to specific vulnerability thresholds as described in Table 4.1 below.

Table 4.1 Combined Hazard Curves – Vulnerability Thresholds

Hazard Vulnerability Classification	Description
H1	Generally safe for vehicles, people and buildings.
H2	Unsafe for small vehicles.
H3	Unsafe for vehicles, children and the elderly.
H4	Unsafe for vehicles and people.
H5	Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure.
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure.

Table 4.2 Combined Hazard Curves – Vulnerability Thresholds Classified Limits

Hazard Vulnerability Classification	Classification Limit (D and V in combination)	Limiting Still Water Depth (D)	Limiting Velocity (V)
H1	$D*V \leq 0.3$	0.3	2.0
H2	$D*V \leq 0.6$	0.5	2.0
H3	$D*V \leq 0.6$	1.2	2.0
H4	$D*V \leq 1.0$	2.0	2.0
H5	$D*V \leq 4.0$	4.0	4.0
H6	$D*V > 4.0$	-	-

Importantly, the vulnerability thresholds identified in the flood hazard curves described above can be applied to the best description of flood behaviour available for a subject site. In this regard, the hazard curves can be applied equally to flood behaviour estimates from measured data, simpler 1D numerical modelling approaches, through to complex 2D model estimates with the level of accuracy and uncertainty of the flood hazard estimate linked to the method used to derive the flood behaviour estimate.

4.1.2 Isolation, Effective Warning Time, Rate of Rise and Time of Day

The effective warning time available to respond to a flood event, the rate of rise of floodwaters, the time of day a flood occurs, and isolation from safety by floodwaters and impassable terrain are all factors that may increase the potential for people to be exposed to hazardous flood situations. These factors are important considerations that influence the vulnerability of communities to flooding and are important considerations in managing flood risk.

4.1.2.1 Isolation

As outlined in AEM Handbook 7 (AEMI, 2014), flooding can isolate parts of the landscape and cut-off evacuation routes to flood-free land. This can result in dangerous situations, because people may see the need to cross floodwaters to access services, employment or family members. Many flood fatalities result from the interactions of people, often in vehicles, with floodwaters. Any situation that increases people's need to cross floodwaters increases the likelihood of an injury or fatality.

AEM Handbook 7 recommends that the floodplain be classified by precinct or community based on flood emergency response categories. This classification is separate to the quantification of hazard outlined in this guideline and is addressed in the complementary Technical Flood Risk Management Guideline on Flood Emergency Response Classification of the Floodplain.

4.1.2.2 Effective Warning Time

As outlined in of AEM Handbook 7, effective warning time is the time available for people to undertake appropriate actions, such as lifting or transporting belongings and evacuating.

Lack of effective warning time can increase the potential for the exposure of people to hazardous flood situations. In contrast, having plenty of effective warning time provides the opportunity to reduce the exposure of people and their property to hazardous flood situations.

4.1.2.3 Rate of Rise

Rate of rise of floodwaters is discussed in AEM Handbook 7. A rapid rate of rise can lead to people evacuating being overtaken or cut off by rising floodwaters. It is often associated with high velocities but it can be an issue if access routes are affected by flooding.

4.1.2.4 Time of Day

The time of day influences where people are and what they are doing. This can influence their ability to receive any flood warnings and respond to a flood threat. Inability to receive and respond to a warning can increase the potential for people to be exposed to hazardous flood situations.

4.2 Existing, Future and Continuing Risks

As outlined earlier in the report, the site is located within a flood prone land. The site is affected by a range of flood events including 5% AEP, 1% AEP and PMF. The site is marked as medium risk in Bewsher/BMT WBM flood study (Fig D-1) as per extract below.

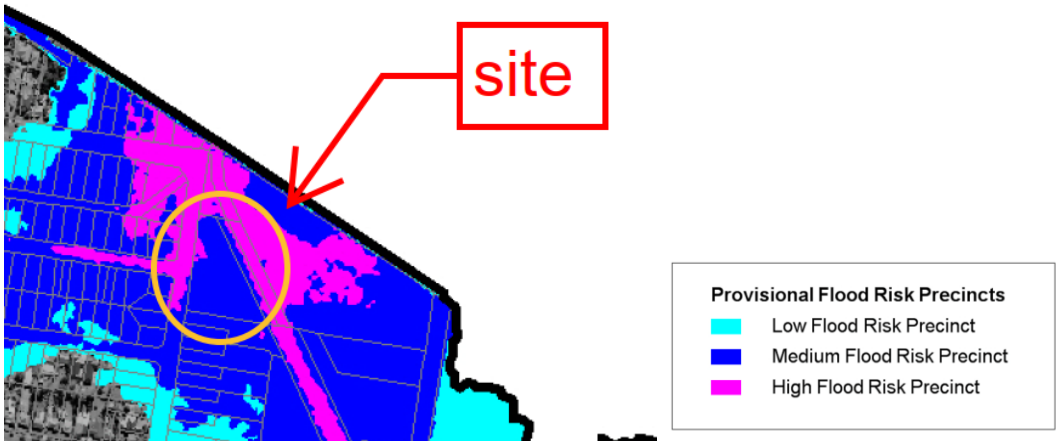

Figure 4.2 Flood Risk Precinct

It is noted that the proposed development is consistent with Council's land use objectives for the site.

The continuing flood risk on the site is identified as the full submergence of the site during the PMF flood event. The proposed ground floor level RL20.50m AHD will be inundated during a PMF event up to 800mm depth.

As the proposed development does not require the presence of personnel on site all the time, the flood risk is confined to limited number of people that could potentially be on site during a PMF flood event.

In comparison to the existing use of the site, this will be a reduction in flood risk as it is estimated that less people will be present at any given time.

The NSW SES Community Flood Safe Guides should be printed and made available within the premises.

For further details, refer to:

http://www.ses.nsw.gov.au/content/documents/pdf/floodsafe/45122/flash_flood_business_floodsafe_toolkit &
http://www.ses.nsw.gov.au/content/documents/pdf/floodsafe/45122/flash_flood_business_floodsafe_poster.

4.3 Preparation for a Flood Emergency

In preparation for a flood emergency, the following should be done:-

- Ensure all users are aware of the flooding situation and that isolation is a real possibility;
- Prepare a coloured notice of reasonable size that informs persons within the site of the procedures if a flooding above the 1% AEP flood event occurs and a flood emergency is called as outlined in the following section; and
- The potential users should be alerted not to be on site if a flood emergency is in place.

Table 4.3 Possible Flood Awareness Strategies

Method	Comment
Letter/Pamphlet from Council	These may be sent (annually or biannually) with the rate notice or separately. A Council database of flood liable properties/addresses makes this a relatively inexpensive measure which can be effective if residents take the time to absorb and apply the suggestions. The pamphlet can inform residents of ongoing implementation of the management measures, changes to flood levels, climate change or any other relevant information.
Council Website	Council should continue to update and expand their website to provide both technical information on flood levels as well as qualitative information on how residents can make themselves flood aware. This would provide an excellent source of knowledge on flooding within the study area (and elsewhere in the LGA) as well as on issues such as climate change. It is recommended that Council's website continue to be updated as and when required.
Displays at Key Locations or Similar	This is an inexpensive way of informing the community and may be combines with related displays.
Flood Preparedness Program	Providing information to the users regarding flooding helps to inform it of the problem and associated implications. However, it does not necessarily adequately prepare people to react effectively to the problem. A Flood Preparedness Program would ensure that the community is adequately prepared. The SES would take a lead role in this.

4.4 Actions in the Likelihood or During a Flood

The following actions should be listed on the notice to be displayed on site at key locations.

- Evacuate the site if safe to do so when the rising floodwaters inundate Helen Street to the north (ie along the bend). The evacuation should be directed to flood free areas;

- Contact the emergency services on 000 and the SES on 132500 alerting them to the situation;
- Maintain contact with the emergency services; and
- In the event of a medical emergency, contact the emergency services by phone 000 and advise them of the need for assisting and follow their instructions.

4.5 After the Flood

Once the-all clear has been given by the emergency services and the surrounding roads have been reopened, the following actions can occur:

- Do not enter floodwaters;
- Undertake an assessment of any damage before re-using or allowing others to re-use the premises;
- Remove any debris and clean around all entrances and access points;
- Make an assessment of the facility to resume normal operations;
- Consult with the emergency services and the SES to obtain feedback of the operation of the plan;
- Amend the risk plan appropriately and issue replacement notice to users and public locations; and
- Update any training program to reflect the changes.

4.6 Emergency Contact Details

The following contact list, or similar is to be kept on site at all times.

Table 4.4 Emergency Contact List

Organisation	Telephone	Contacy
State Emergency Services	132500	
Gas		
Sydney Water		
Fire Brigade	000	
Police	000	
Ambulance	000	
Electricity		

4.7 Program

The following program is recommended to allow the implementation of the measures outlined in this management plan.

Table 4.5 Implementation, Maintenance and review program

Measure Description	When	By Who	Maintenance/Review
Flood compatible materials	During construction	Builder/Owner	Cleaning after flooding
Flood warning system	Prior to occupation	Builder/owner	As recommended by manufacturer (Every 6 months)
Perimeter fencing	During construction	Builder	As required
Evacuation procedure	Occupation	Site Operator	Yearly
Induction course	Occupation	Site Operator	Yearly
SES contact	Occupation	Site Operator	Yearly
Flood Risk Management Plan	During design period	Consultant/Owner	Every 5 years or when more Flooding information is available

5 Plan Adoption

This flood risk management plan prepared for the development at:

88 Helen Street, Sefton

Has been adopted by

_____

Being the operator of the facility on the _____ / _____ / _____.

Table 5.1 Flood Risk Management Plan Review

Review No.	Date	Prepared by	Signed by

A1 Appendix 1

Extract from Council's SSR Report

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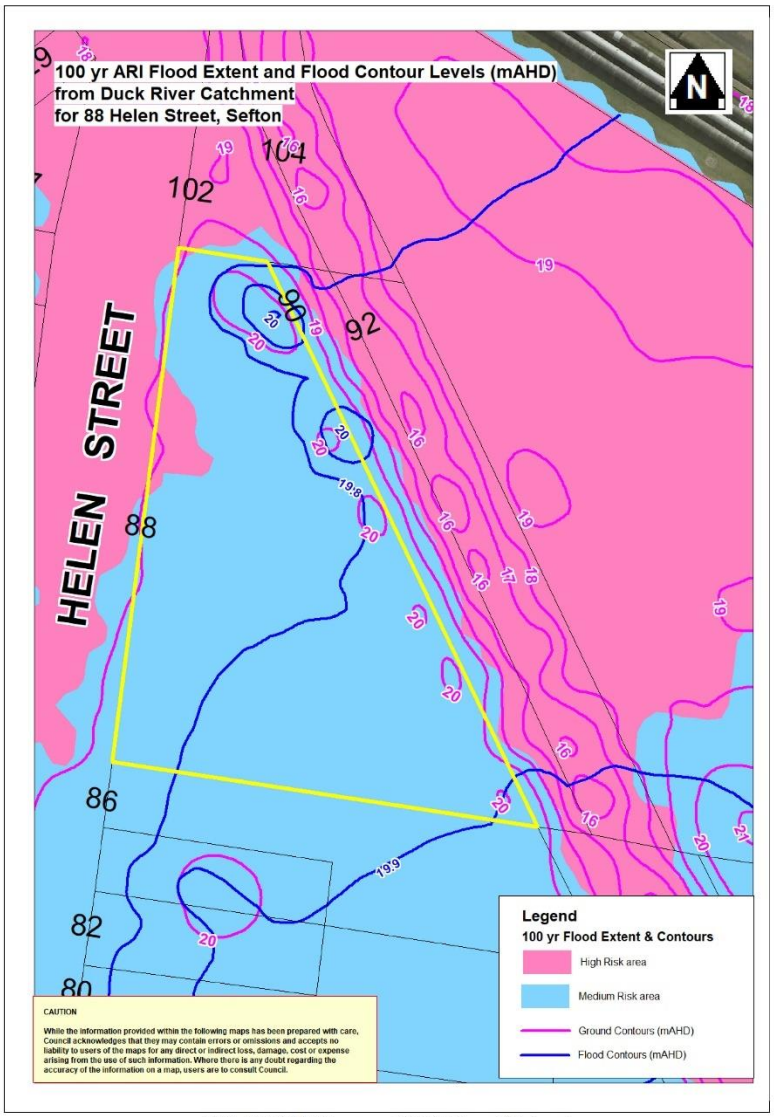

1% AEP (100 year ARI) Flood Extent

Figure A 1.1 Extract from SSR

A2 Appendix 2

Survey Plan

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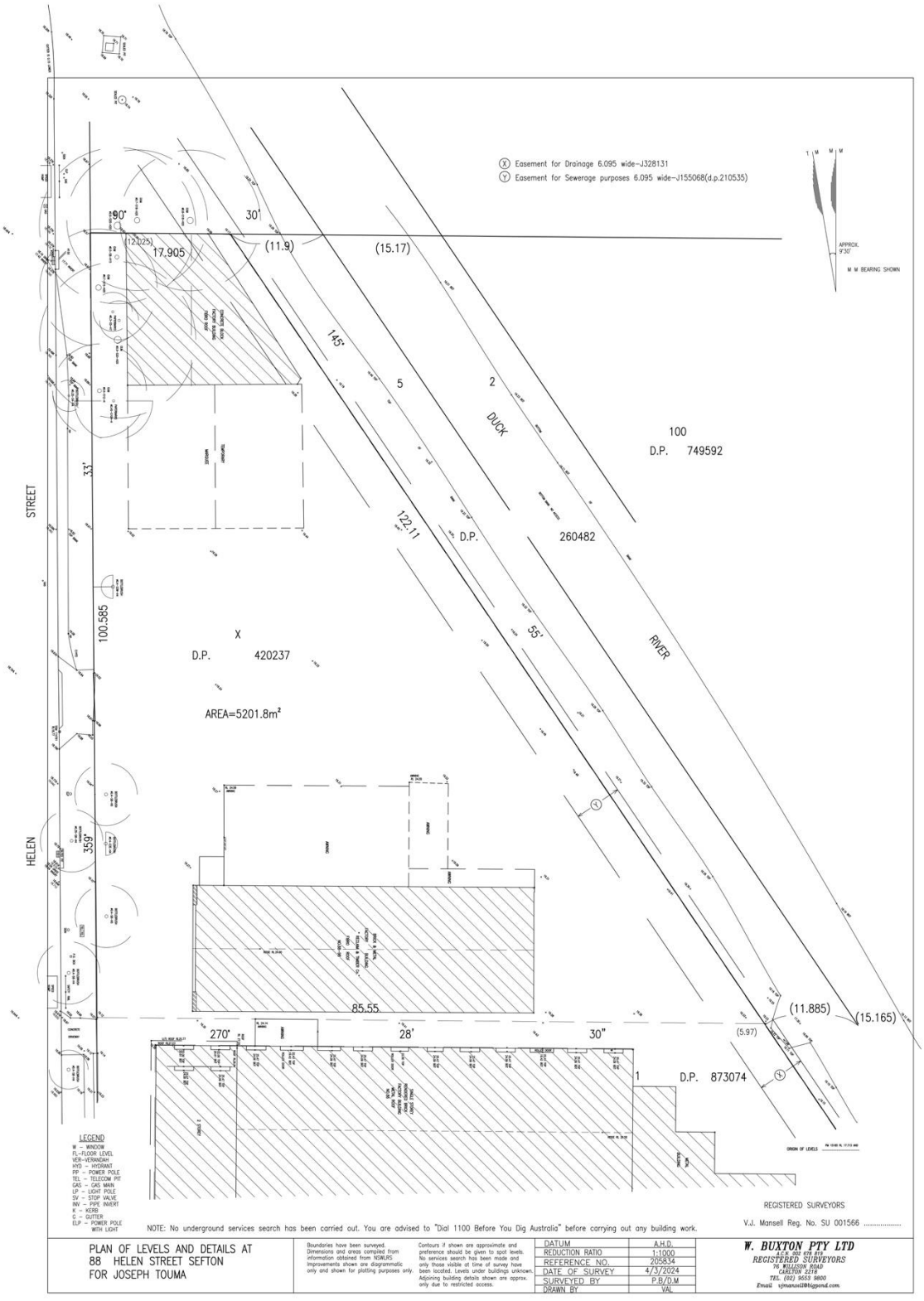

Figure A 2.1 Survey Plan

A3 Appendix 3

Architectural Plans

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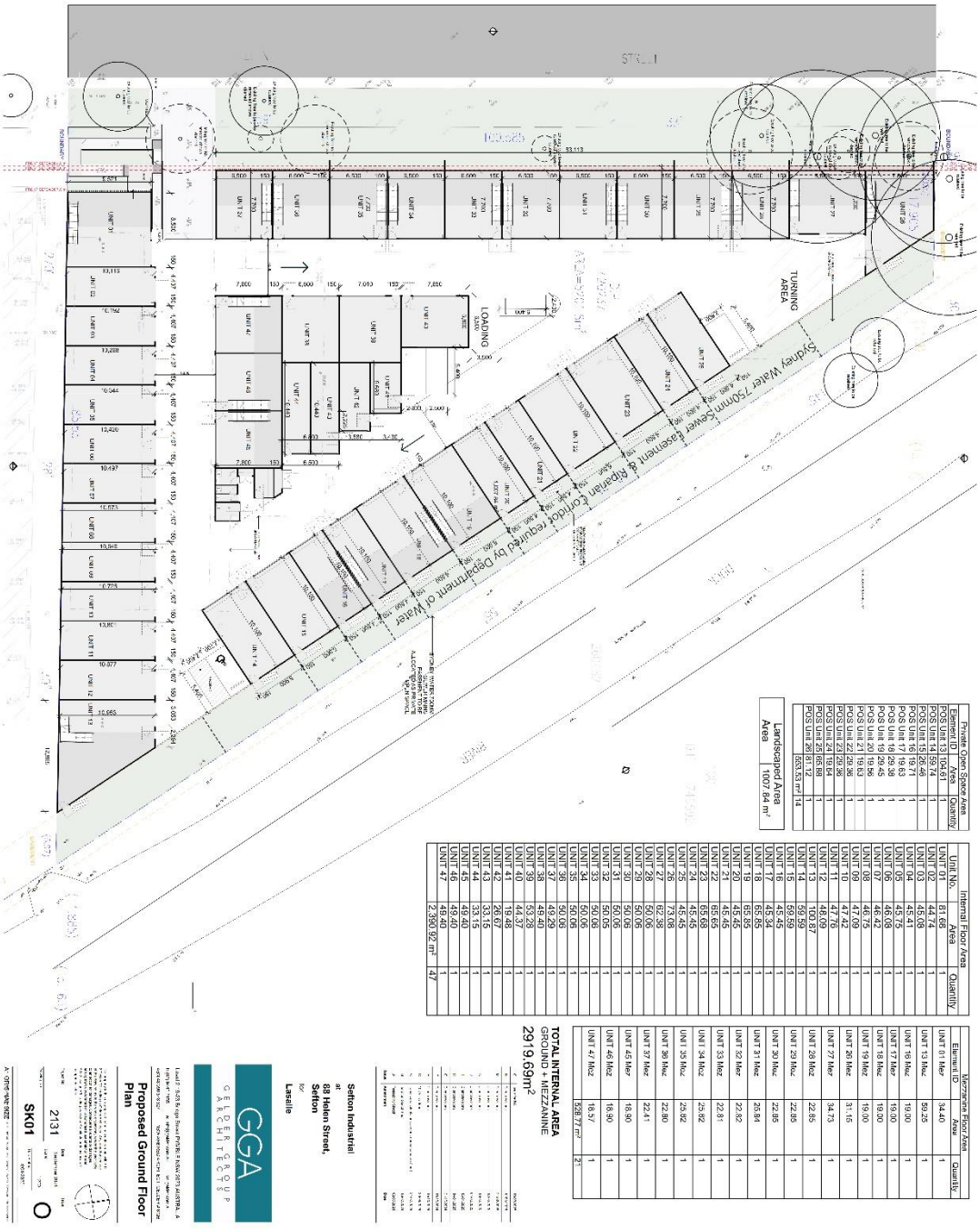

Element ID	Area	Quantity
POS Unit 13	104.61	1
POS Unit 14	59.74	1
POS Unit 15	53.87	1
POS Unit 16	19.71	1
POS Unit 17	19.63	1
POS Unit 18	29.39	1
POS Unit 19	29.45	1
POS Unit 20	19.85	1
POS Unit 21	19.85	1
POS Unit 22	29.36	1
POS Unit 23	29.36	1
POS Unit 24	19.64	1
POS Unit 25	19.89	1
POS Unit 26	53.87	1
663.53 m²		14

Landscaped Area
1007.84 m²

Unit No.	Area	Quantity
UNIT 01	81.66	1
UNIT 02	44.74	1
UNIT 03	45.08	1
UNIT 04	45.08	1
UNIT 05	45.75	1
UNIT 06	46.08	1
UNIT 07	46.42	1
UNIT 08	46.75	1
UNIT 09	47.09	1
UNIT 10	47.42	1
UNIT 11	47.76	1
UNIT 12	48.09	1
UNIT 13	100.67	1
UNIT 14	59.59	1
UNIT 15	59.59	1
UNIT 16	45.45	1
UNIT 17	45.45	1
UNIT 18	65.85	1
UNIT 19	65.85	1
UNIT 20	45.45	1
UNIT 21	45.45	1
UNIT 22	65.65	1
UNIT 23	65.68	1
UNIT 24	45.45	1
UNIT 25	45.45	1
UNIT 26	73.08	1
UNIT 27	62.38	1
UNIT 28	50.06	1
UNIT 29	50.06	1
UNIT 30	50.06	1
UNIT 31	50.06	1
UNIT 32	50.05	1
UNIT 33	50.06	1
UNIT 34	50.06	1
UNIT 35	50.06	1
UNIT 36	50.06	1
UNIT 37	40.29	1
UNIT 38	45.45	1
UNIT 39	53.39	1
UNIT 40	44.37	1
UNIT 41	19.48	1
UNIT 42	26.67	1
UNIT 43	33.15	1
UNIT 44	33.15	1
UNIT 45	49.40	1
UNIT 46	49.40	1
UNIT 47	48.40	1
	2,360.92 m²	47

Element ID	Area	Quantity
UNIT 01 Mezz	34.40	1
UNIT 13 Mezz	59.25	1
UNIT 16 Mezz	19.00	1
UNIT 17 Mezz	19.00	1
UNIT 18 Mezz	19.00	1
UNIT 19 Mezz	19.00	1
UNIT 26 Mezz	31.15	1
UNIT 27 Mezz	34.73	1
UNIT 28 Mezz	22.85	1
UNIT 29 Mezz	22.85	1
UNIT 30 Mezz	22.85	1
UNIT 31 Mezz	25.84	1
UNIT 32 Mezz	22.82	1
UNIT 33 Mezz	22.81	1
UNIT 34 Mezz	25.62	1
UNIT 35 Mezz	25.62	1
UNIT 36 Mezz	22.80	1
UNIT 37 Mezz	22.41	1
UNIT 45 Mezz	18.90	1
UNIT 46 Mezz	18.90	1
UNIT 47 Mezz	18.57	1
	528.77 m²	21

Figure A 3.1 Ground Floor Plan

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